

fulness is the single-plate or screen-plate process. Here evidently the author writes with considerable experience and even enthusiasm, and as those parts that deal with the "autochrome," "dioptrichrome," "Thames," and "omnicolore" plates have been revised by the respective makers of these plates, there is excellent guarantee that the details given are trustworthy.

There is always a difficulty when entering into particulars on such a subject, that commercial products are liable to vary, and it is often impossible for one person to know the extent of this variation in every section of the subject. Just one example will indicate the need for bearing this in mind. Dr. Johnson says of the "dioptrichrome" plate that the "first black condition is very perfectly fulfilled." That means that the red, green, and blue patches on the colour screen are so proportioned that the general colour presented to the eye is a pure grey. We have just examined two screens of this make, and one is a rather fine green and the other pinkish. The preliminary chapters on the eye, colour vision, and colour blindness, although short, are of much interest.

Tables for Calculation of Rock-Analyses. By Alfred Harker, F.R.S. (Cambridge: University Press, 1910.) Price 1s.

CHEMICAL analyses of rocks are constantly becoming more refined and complete, and, in consequence, if accurately interpreted, are of increasing value to the petrologist. Systems of rock-classification that depend on chemical composition are also now in favour. For these and other reasons it becomes desirable that the percentages of components as stated in a rock-analysis should be translated as easily as possible into percentages of the constituent rock-forming minerals. Mr. Harker's tables are designed to meet this want, and they have so many valuable features that they should be in the hands of all teachers of petrology. They are very compact, and consequently are cheap compared with the books hitherto in use for this purpose; much time may be saved by their use and long calculations avoided. The method adopted is simple and exceedingly ingenious, and with these tables a student who has not hitherto attempted calculations of this sort may make them more rapidly and even more accurately than by any of the methods formerly in use.

Populäre Vorträge aus dem Gebiete der Entwicklungslehre. By Dr. Wilhelm Breitenbach. Pp. vi+264. (Brackwede i. W.: Verlag von Dr. W. Breitenbach, 1910.) Price 3 marks.

This little book consists of six popular lectures, dealing respectively with the origin of life, recent theories of heredity, fifty years of Darwinism, Fritz Müller, the prince of observers, Hermann Müller, and the history of the human race. They are written in a clear and interesting style, and, apart from their scientific value, may be strongly recommended to English students of biology who desire to improve their acquaintance with the German language.

Open-air Studies in Botany: Sketches of British Wild Flowers in their Homes. By R. L. Praeger. Second edition, revised. Pp. xiii+266. (London: Charles Griffin and Co., Ltd., 1910.) Price 6s. net.

THE first edition of this book was reviewed in NATURE of June 16, 1898 (vol. lviij, p. 150). The present issue has been revised throughout, but little alteration has been made. The nomenclature has been changed where necessary to follow that used in the "List of British Seed-plants and Ferns," published by the British Museum in 1907.

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LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

A Perpetual Calendar.

I CANNOT allow the article signed by "W. T. L." in NATURE of February 2 to pass without a protest. The proposal to make "New Year's Day" a *dies non*, named "New Year's Day," and not a day of the week or of the month, emanated, I believe, from Mr. Alexander Philip of Brechin. Supposing that January 1 were a Sunday, and supposing that March, June, September, and December were given 31 days, the other months 30 each, February 1 would always fall on a Tuesday, March 1 on a Thursday, and so on. This would save much trouble in arranging dates for meetings. But, more important still, the four "quarters" of the year would be equal, instead of, as at present, consisting of 90, 91, 92, and 92 days. From testimony by railway companies, insurance offices, chambers of commerce, and business men, an alteration which would equalise terms would meet with universal approval. It is difficult to see where the trouble mentioned by your contributor would come in. It may be stated that authorities in the leading churches have been consulted, and that apparently no objection would be raised by them. I am informed that the Belgian Foreign Office has addressed a diplomatic inquiry at the Vatican, and that the Holy See is not opposed to the reform of the calendar. Surely the organ of English science is not going to oppose a useful innovation, acceptable to all practical men, which would save an enormous amount of labour in accounting and would simplify all business arrangements.

WILLIAM RAMSAY.

University College, Gower Street, London, W.C.,
February 3.

ALTERATIONS in so fundamental a matter as the regulation of time and of the calendar must always give trouble, and should not be adopted unless very great advantages would result from the change. Now it appears to the writer that no such advantage would be obtained by making the days of the week always correspond to those of the month; indeed, in the arrangements of life it is often found convenient that they should *not* correspond. As to the lengths of the quarters being now unequal, they could be rendered as equal as possible by the simple process of restoring the original regulation of Julius Cæsar, according to which February had 29 days in common years and 30 days in leap-years, and August had only 30 days. Very serious inconvenience would probably result from the ignoring of a day every year, particularly as this would have to be extended to two days in leap-year.

W. T. L.

The Progressive Disclosure of the Entire Atmosphere of the Sun.

SOME of the remarkable spectroheliograms which you reproduce in connection with your report of M. Deslandres' lecture, delivered by that gentleman at the Royal Institution on June 12, 1910, call for special comment. This applies more especially to the pair which represents the sun for March 21, 1910. I had the good fortune to observe spectroscopically an exceptionally fine prominence, which persisted for two entire synodic rotations. During some of the early days in March it graced the west limb, then reappeared in the east about a fortnight later, showed again in the west, reappeared in the east once more towards the middle of April, and gave a final appearance in somewhat modified form on the west limb on April 28. It is fully described and illustrated in an interesting note by Dr. F. Slocum in the *Astrophysical Journal* for September, 1910.

This prominence, while of fair altitude, was more conspicuous with regard to its latitudinal extent. But as regards altitude, it should be mentioned here that the Yerkes photographs were taken in calcium light, while my spectroscopic observations were made in hydrogen H α light, and I have noted on many occasions, before and

since, that the calcium photographs have a hard, skeleton look about them. In hydrogen $H\alpha$ the same prominences look more full, and are overlaid by extensive crowns or strata of clouds of varying brilliance, which I cannot find in the corresponding calcium pictures. Thus this prominence also appeared much higher in the radiations of $H\alpha$ than the calcium spectroheliograms show. In the case under discussion, the prominence was chiefly remarkable by virtue of its enormous extent in latitude, spanning as it did right across the equatorial regions from P.A. 37 to P.A. 84, encircling thus more than 45 degrees of arc practically along an imaginary meridian line.

It is here where the spectroheliogram taken by M. Deslandres on March 21 comes in, showing as it does this remarkable prominence as a pronounced dark calcium and hydrogen flocculus a few days distant from the east limb. This dark formation conforms in the direction and magnitude of its principal dimensions to the bright structure seen a few days before on the eastern limb. Not only this, but it shows by its pronounced convexity towards the west palpable evidence of equatorial acceleration. Furthermore, it shows along its western contour a bright ribbon, just as one would expect to see if the brightest portion of the prominence was allowed to peep from under an overlying dark or absorbent stratum for reasons of perspective, which in that longitude would be considerable. This is strikingly visible on the glass positives, a fine specimen of which M. Deslandres exhibited at London.

It remains to be recorded as another remarkable feature of this same prominence (by no means infrequently seen by me before and since) that along its top it seemed to be cut off along its entire length by an unbroken and sharp line when seen in $H\alpha$, giving the distinct impression that the entire structure was overlaid by a dense, dark, absorbent mass of vapours, some other outlines of which under conditions of best definition could be made out, as I pointed out in my recent contribution to solar research in *The Observatory*. The dark flocculus depicted in M. Deslandres' spectroheliogram does in the present case undoubtedly show that hypothetical dark overlying stratum, which therefore is situated at very considerable height above the sun's general surface. The prominence persisted to show this abrupt upper termination during successive appearances, but this was not so apparent when it was last seen in the west on April 28, but even then dark masses were seen projected on the luminous background afforded by the prominence itself.

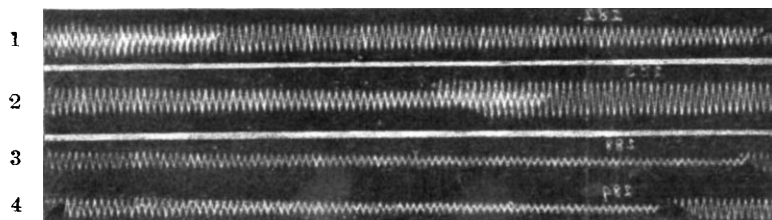
ALBERT ALFRED BUSS.

Chorlton-cum-Hardy, February 16.

Vibrations of a Pianoforte Sound-board.

WHILE investigating the vibrations of the pianoforte sound-board, a curious result was obtained a short time ago which it is perhaps worth while recording.

One leg of an optical lever was attached to the sound-board of a pianoforte at a point 3.5 cm. below the frame supporting the keys and 9 cm. on the treble side of the bridge. A beam of light from an electric arc falls on a concave mirror attached to the optical lever and is reflected to the drum of a phonograph. The combined vibrations of the beam of light, set in motion by the sound-board, and the rotation of the drum trace out a time-displacement



curve of the vibration on a strip of photographic film fastened round the drum. For a full description of the apparatus see the *Phil. Mag.* for April, 1910.

Four curves are enclosed. No. 1 was produced by striking the note a' on the pianoforte, No. 2 by striking a the octave lower. The speed of the drum was the same

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in both cases, 68 cm. per sec. It will be noticed that No. 2 gives only the second partial of the note struck. This was so unusual that it was thought some mistake had been made, and the apparatus was again connected with the same point of the sound-board. No. 3 shows the curve obtained for a' and No. 4 that for a , thus confirming the previous results.

It is remarkable that a point can be found on the sound-board which responds so well to the second partial of a particular note that the fundamental is apparently entirely excluded.

G. H. BERRY.

14 City Road, London, E.C., February 3.

Occurrence of *Matonia sarmentosa* in Sarawak.

WHILE resident in Sarawak I received several inquiries with regard to the conditions of growth of *Matonia sarmentosa*, Baker. As I can find no published record of this, the following note will be of interest to pteridophylogists.

It was first found by Dr. Charles Hose hanging from the roof of a limestone cave at Niah, in the Baram Residency, Sarawak; this was supposed to be the only locality in which it occurred, until it was recently discovered by myself to be growing also on the limestones at both Bau and Bidi in Upper Sarawak. Although some 300 miles of jungle separates this district from Niah, there are, I believe, isolated limestone outcrops on which, when careful search is made, it will possibly be found, thus accounting for its erratic distribution, but it has not been found on the limestone at Quop, which has been well searched.

This limestone formation is considered to be Jurassic by Mr. J. S. Gilkie, and is an extremely hard and fine-grained type, but as the fern does not grow on the original rock, this can only influence its growth by providing suitable temperature and moisture. In the immediate neighbourhood of these immense masses of limestone a cooler atmosphere is noticeable.

I have never observed this fern growing below 50 feet above the ordinary ground-level; its range may extend to an altitude of 200-300 feet, and then only on the rough and somewhat soft surface of a stalagmite or when the surface of the limestone has received a deposit of calcium carbonate from solution. The position occupied by the clumps is always open and airy; the direct sun rays do not appear to be detrimental, but it is invariably sheltered by an overhanging cliff from the rain. When the conditions are all favourable, it grows in very large masses out of all proportion to its slender root-hold; this renders its detachment from the rock easy, but its inaccessible position makes it one of the most difficult of ferns to collect, and this can only be done by the aid of Dyaks clever at constructing ladders and scaffolding.

It is interesting to note that, of all the ferns peculiar to this limestone, in its choice of situation it is the most highly developed.

CECIL J. BROOKS.

Drinkstone, Bury St. Edmunds.

Glacial Erosion.

YOUR reviewer states that "the passage of ice over the British uplands swept away all the loose rock materials and re-deposited them in the lowlands as glacial drifts." I presume that the loose rock materials are supposed to have been produced by pre-glacial weathering. Now, weathered rocks are in very many cases easily recognised, and my own experience of the rocks contained in boulder clays is that they very seldom indeed show any signs of weathering whatever. The boulders are of fresh hard rock which has been removed by the ice.

R. M. DEELEY.

Inglewood, Longcroft Avenue,
Harpden, February 10.

MATERIALS loosened by pre-glacial weathering which are weathered throughout are naturally reduced to powder alike by glacial and by river transport; but any block which is only partly weathered through would lose its weathered crust and the nucleus would be left as a fresh hard boulder.

J. W. G.